Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A solid-state imaging device, comprising:

a pixel array having a plurality of pixels arranged in a matrix; and

a control unit that controls the pixel array;

each of the pixels including:

a photo diode that generates carriers depending on an intensity of incident light;

an accumulation region that accumulates the generated carriers;

an insulated-gate output transistor that outputs a signal according to a threshold voltage that changes depending on a number of the carriers accumulated in the accumulation region; and

an insulated-gate clear transistor that discharges, during a discharging period, the carriers accumulated in the accumulation region and that discharges, during an accumulation period, spilled carriers that exceed a capacity of the accumulation ~~region;~~region, the accumulation period being a time period in which carriers are accumulated in the accumulation region up to the capacity of the accumulation region;

the control unit applies a predetermined voltage to a gate electrode of the clear transistor in the accumulation period when the generated carriers are accumulated in the accumulation region, the predetermined voltage being different from voltage applied to the gate electrode of the clear transistor in the discharging period when the carries accumulated in the accumulation region are discharged; and

the clear transistor discharges the spilled carriers in order to prevent the spilled carriers from entering the accumulation region of adjacent pixels, if the generated carriers spill from a source region of the clear transistor, in the accumulation period.

2. (Currently Amended) A solid-state imaging device, comprising:

a pixel array having a plurality of pixels arranged in a matrix; and

a control unit that controls the pixel array;

each of the pixels including:

a photo diode that generates carriers depending on an intensity of incident light;

an accumulation region that accumulates the generated carriers;

an insulated-gate output transistor that outputs a signal according to a threshold voltage that changes depending on a number of the carriers accumulated in the accumulation region; and

an insulated-gate clear transistor that discharges the carriers accumulated in the accumulation region;

the control unit applies a predetermined voltage to a gate electrode of the clear transistor in an accumulation period when the generated carriers are accumulated in the accumulation region, the predetermined voltage being different from voltage applied to the gate electrode of the clear transistor in a discharging period when the carries accumulated in the accumulation region are ~~discharged;~~ discharged, the accumulation period being a time period in which carriers are accumulated in the accumulation region up to the capacity of the accumulation region; and

the clear transistor discharges spilled carriers in order to prevent the spilled carriers from entering the accumulation region of adjacent pixels, if the generated carriers spill from a source region of the clear transistor, in the accumulation period,

the clear transistor including a substrate region that is formed below the gate electrode of the clear transistor; and

the substrate region comprising:

an upper region that is formed in a vicinity of the gate electrode of the clear transistor and that has a relatively low impurity concentration; and

a lower region that is formed below the upper region and that has a relatively high impurity concentration.

3. (Currently Amended) A solid-state imaging device, comprising:

a pixel array having a plurality of pixels arranged in a matrix; and

a control unit that controls the pixel array;

each of the pixels including:

a photo diode that generates carriers depending on an intensity of incident light;

an accumulation region that accumulates the generated carriers;

an insulated-gate output transistor that outputs a signal according to a threshold voltage that changes depending on a number of the carriers accumulated in the accumulation region; and

an insulated-gate clear transistor that discharges the carriers accumulated in the accumulation region;

the control unit applies a predetermined voltage to a gate electrode of the clear transistor in an accumulation period when the generated carriers are accumulated in the accumulation region, the predetermined voltage being different from voltage applied to the gate electrode of the clear transistor in a discharging period when the carries accumulated in the accumulation region are ~~discharged;~~ discharged, the accumulation period being a time

period in which carriers are accumulated in the accumulation region up to the capacity of the accumulation region; and

the clear transistor discharges spilled carriers in order to prevent the spilled carriers from entering the accumulation region of adjacent pixels, if the generated carriers spill from a source region of the clear transistor, in the accumulation period,

each of the pixels further comprising:

a pixel-forming region of a second conductivity type that is formed on a semiconductor substrate of a first conductivity type and where at least one of the pixels is formed;

a buried region of a first conductivity type that is formed in the pixel-forming region and that includes a first partial buried region and a second partial buried region, the first partial buried region formed at a relatively deep position and having a relatively low impurity concentration, the second partial buried region formed at a relatively shallow position and having a relatively high impurity concentration, the second partial buried region being the accumulation region; and

a discharging region of a first conductivity type that is formed in the pixel-forming region and into which carriers discharged from the accumulation region flow;

the output transistor including an output gate electrode and being formed above the pixel-forming region on the accumulation region with an insulating film therebetween; and

the clear transistor including a clear gate electrode and being formed above the pixel-forming region between the buried region that includes the first and second partial buried regions and the discharging region.

4. (Original) The solid-state imaging device according to Claim 3, the photo diode including a junction region between the first partial buried region and the pixel-forming region.

5. (Previously Presented) The solid-state imaging device according to Claim 3, both the accumulation region and the buried region that includes the first and second partial buried regions functioning as a source region of the clear transistor.

6. (Previously Presented) The solid-state imaging device according to Claim 3:

the gate electrode having a substantially annular shape; and

the output transistor including a source region that is formed inside the gate electrode and a drain region that is formed outside the gate electrode.

7. (Original) The solid-state imaging device according to Claim 3:

the first conductivity type being a p-type;

the second conductivity type being an n-type; and

the carriers being holes.